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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/829,714	Applicant(s) DENTON ET AL.	
	Examiner Marianne S. Ocampo	Art Unit 1723	

-- The MAILING DATE of this communication appears on the cover she t with th corr spondenc address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 August 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7,10,18-23,25,26,39-46 and 52* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7,10,18-23,25,26,39-46 and 52* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *4* .
4) ☐ Interview Summary (PTO-413) Paper No(s). ____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: the word "bock" in page 13, line 17 should be rewritten as "block".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1 – 7, 41, 44 and 52 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a). Regarding claim 1, the phrase "and/or at least one polymer" renders the claim indefinite because it is unclear if the claim is adding the limitation of the filtration layer being made of fiberglass and at least one polymer, or the filtration layer being made of only at least one polymer (without the fiberglass).

b). Claims 2 – 7 are dependent claims of claim 1, and they also suffer the same defects since they depend therefrom.

c). Claim 41 recites the limitation "the longitudinal axis of the filter media" in line 2. There is insufficient antecedent basis for this limitation in the claim.

d). With regards to claim 44, it is unclear what additional features of the filter element is being added by this claim, since the sheet of screen material/exoskeleton structure is no longer "rectangular in shape" once it has been thermally bonded to the radially-outer or radially-inner peaks of the cylindrical media. Is claim 44 claiming an intermediate product?

e). Claim 52 recites the limitation "the radially inward peaks of the pleats" in line 5. There is insufficient antecedent basis for this limitation in the claim. Is the cylindrical filter media comprising a pleated filter media having a plurality of pleats which have radially inward peaks, or is the limitation a typographical error?

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claim 10 is rejected under 35 U.S.C. 102(b) as being anticipated by Cella et al. (WO 97/31695).

6. With regards to claim 10, Cella et al. disclose a filter element comprising a cylindrical filter media (20) and an exoskeleton support structure (64) surrounding (an inner surface of) the filter media (20), the filter media (20) being formed only cellulose-fiber free and woven mesh-free layers including a filtration layer (23) formed of being made of fiberglass (borosilicate microglass fibers with acrylic binder) sandwiched between inner and outer layers (38 & 30, respectively), and the layers of the filter media (20) being folded into longitudinally extending pleats having radially inner peaks (52) defining an inner diameter, radially outer peaks (50) defining an outer diameter and sidewalls (54, 56) extending therebetween and the exoskeleton support structure (64) being attached (bonded by adhesive layer 65) to the radially inner peaks (52) in such a manner that the filter media (20) is sufficiently supported without cellulose-fiber and/or woven mesh endoskeleton support layers, as in figs. 2 – 3 and pages 7 - 10.

7. Claims 20 – 22 and 25 is rejected under 35 U.S.C. 102(b) as being anticipated by Zraik (US 5,762,796).

8. With regards to claim 20, Zraik discloses a cylindrical filter media (14) comprising a plurality of longitudinally extending pleats (40) and a side seam (70, 72), the plurality of pleats including two end pleats (74, 76) each including a filtration layer (22) and an inner layer (19) and

an outer layer (20), the two end pleats (74 and 76), each having a distal end (15, 16), a radially inner peak (74, 76), an endmost sidewall (78, 79) extending from the distal end to the radially inner peak and a radially outer peak (80, 81), the sidewalls being positioned adjacent each other and the distal ends being positioned radially outward relative to the radially inward peaks (74, 76) and the side seam comprising an adhesive bead (70, 72) which encapsulates all of the layers (19, 22, 20) of the filter media in the distal ends of the end pleats, as in figs. 2 – 3.

9. Regarding claim 21, Zraik further discloses the adhesive bead (72) extends radially inward between the respective sidewalls (78, 79) of the two end pleats, as in figs. 2 – 3.

10. Concerning claim 22, Zraik also discloses the adhesive bead (72) extending circumferentially between the radially outward peaks of the two end pleats, as in figs. 2 – 3.

11. With respect to claim 25, Zraik discloses a cylindrical filter media (14) comprising a plurality of longitudinally extending pleats (40), and a side seam (70, 72), the plurality of pleats including two end pleats (74 and 76), each having a distal end (15, 16), a radially inner peak (74, 76), an endmost sidewall (78, 79) extending from the distal end to the radially inner peak and a radially outer peak (80, 81), the sidewalls being positioned adjacent each other and the distal ends being positioned radially outward relative to the radially inward peaks (74, 76) and the side seam comprising an adhesive bead (70, 72) which extends radially inward between the endmost

sidewalls of the end pleats and circumferentially between endmost radially outward peaks (80, 81) of the two end pleats, as in figs. 2 – 3 and cols. 4 – 5.

12. Claims 26, 39 and 44 – 46 are rejected under 35 U.S.C. 102(b) as being anticipated by Wright et al. (US 3,216,578).

13. With regards to claim 26, Wright et al. disclose a filter element comprising a cylindrical filter media (1a) and an exoskeleton support structure (2a, 3a) for the filter media, the cylindrical filter media (1a) comprising a plurality of longitudinally extending pleats having radially-inner peaks defining an inner diameter (adjacent inner screen 3a) and radially-outer peaks defining an outer diameter (adjacent outer screen 2a) and sidewalls (5a) extending therebetween and the exoskeleton support structure comprising a support screen (for instance, 3a) having a first set of cords extending in a first direction and a second set of cords extending in a second direction and intersecting with the first set of cords and openings defined therebetween, and the cords being attached to each of the radially-outer peaks, or each of the radially-inner peaks (in this instance, the support screen is 2a), thereby exoskeletonally supporting the pleats in an appropriately spaced and non-collapsed condition, adjacent cords in the first set being separated from each other by a distance d_1, adjacent cords of the second set being separated from each other by a distance d_2, and adjacent radially-outer peaks being separated from each other by a distance d_{pleat}, and the distance d_1 between some of the first set of cords (i.e. those extending

parallel to the pleats and to the axis of the filter media) being about half to about twice the distance between adjacent radially-outer peaks, as in figs. 6 – 7 and cols. 4 – 5.

14. Concerning claim 39, Wright et al. disclose a filter element comprising a cylindrical filter media (1a) and an exoskeleton support screen (2a or 3a) for the filter media (1a), the cylindrical filter media comprising a plurality of longitudinally extending pleats having radially-inner peaks defining an inner diameter (adjacent inner screen 3a) and radially-outer peaks defining an outer diameter (adjacent outer screen 2a) and sidewalls (5a) extending therebetween, the support screen (2a or 3a) comprising a sheet of screen material (such as in fig. 1, indicated as 2 or 3) having a width approximately equal to the axial dimension of the filter media (1a) and a length approximately equal to the circumferential dimension of the filter media plus a seam allowance (i.e. extra material on right side thereof, as in fig. 1, for their connection/attachment by any means including soldering, welding, etc. to form a cylindrical support around the inner and outer surface of the cylindrical media in fig. 6), the sheet of screen material (2a or 3a) having lateral edges joined together at a side seam (not shown) and being thermally bonded (i.e. welded or soldered) to each of the radially-outer peaks or each of the radially-inner peaks in a spaced and non-collapsed condition, as in col. 3 – 5 and figs. 1 – 7.

15. Regarding claim 44, Wright et al. also disclose the sheet of screen material (2, 2a or 3, 3a) being rectangular in shape, prior to being shaped into a cylindrical wrap/support around the inner or outer surfaces of the cylindrical filter media (1a), as in figs. 1 and 6.

16. With respect to claim 45, Wright et al. further disclose the support screen (3a) being thermally bonded (by welding or soldering) to each of the radially-outer peaks, as in cols. 4 – 5 and fig. 7.

17. With regards to claim 46, Wright et al. further disclose the support screen (2a) being thermally bonded (by welding or soldering) to each of the radially-outer peaks, as in cols. 4 – 5 and fig. 7.

Claim Rejections - 35 USC § 103

18. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

19. Claims 1 and 18 – 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cella et al. (WO 97/31695) in view of Miller et al. (US 5,552,048).

20. Concerning claim 1, Cella et al. disclose a microfilter element (10) capable of removing impurities in the range of about 0.5 microns to about 25.0 microns from a fluid such as aviation fuel, the element (10) comprising a cylindrical filter media (20) and an exoskeleton (64) for the filter media (20), the filter media (20) including at least one filtration layer (31 or 36) being made of fiberglass (borosilicate microglass fibers with acrylic binder) sandwiched between inner and outer layers (38 & 30, respectively), the inner and outer layers (38, 30) being made of non-woven polymer (extruded nylon or polyester), and the layers of the filter media (20) being folded into a plurality of longitudinally extending pleats and the exoskeleton (64) comprising a support wrap formed of a porous fibrous filter media bonded to the inner peaks (52) of the pleats to support the pleats in an appropriately spaced and non-collapsed condition and the support wrap (6) providing a tight array of attachment points so that the filter media (20) is sufficiently supported without having cellulose-fiber and/or woven mesh endoskeleton support layers, as in fig 3 and pages 7 – 10. However, Cella et al. fail to disclose the exoskeleton being a support screen providing at least 50% open flow area and the pleats having a density of 8 or more pleats per inner diameter inch. Miller et al. teach a similar pleated filter element such as the one disclosed by Cella et al, the filter element (20) comprising a cylindrical filter media including at least one filtration layer (23) being made of nonwoven sheet of glass fibers (i.e. fiberglass) sandwiched between inner and outer layers (24 & 21, respectively), the inner and outer layers being formed of a non-woven polymer (nylon, polyester, polypropylene, etc) and the layers of filter media (20) being folded into a plurality of longitudinally extending pleats and an exoskeleton (70, 71) comprising a polymeric support screen (71) bonded (i.e. fusion-bonded or

using an adhesive) to the peaks of the pleats to support the pleats in an appropriately spaced and non-collapsed condition, wherein the support screen (71) providing at least 50% open flow area (via mesh openings 72, as in fig. 9) and a tight array of attachment points so that the filter media (20) is sufficiently supported without having cellulose-fiber and/or woven mesh endoskeleton support layers, and furthermore, the pleats having spacers in the form of polymeric beads (25) which are evenly spaced at about 5 – 20 beads per (inner diameter) inch, which is equivalent to a pleat density of 8 or more pleats per inner diameter inch, as in figs. 1, 5 and 9 and cols. 3– 12. Each polymeric bead spacer corresponds to a pleat and the spaces/density of the beads (25) therefore correspond to the pleats density of the filter element (20) of Miller et al., as in figs 2 and 5 and in cols. 6 – 7. It is considered obvious to one of ordinary skill in the art at the time of the invention to modify the filter element of Cella et al, by adding the embodiments taught by Miller et al., in particular forming the filter media (element) such that it has a pleat density of about 8 or more pleats per inch and having an exoskeleton formed of a support screen with at least 50% open flow area, in order to provide an improved microfilter element which has the ability to ensure that a proper and maximum fluid flow through the pleats of the filter media occurs and provide a support wrap/screen (exoskeleton) which restrains the movement of the pleats, thereby preventing/decreasing abrasion resulting from the movement of the pleats and increasing the lifespan of the filter element, as well as provide the maximum open area for flow of fluid therethrough.

21. With regards to claim 18, Cella et al. disclose a filter element (10) comprising a cylindrical filter media (20) and an exoskeleton (64) supporting the filter media (20), the filter media being formed from a plurality of layers (30, 31, 36, 38) folded into a plurality of longitudinally extending pleats having radially inner peaks (52) defining an inner diameter, radially-outer peaks (50) defining an outer diameter and sidewalls (54, 56) extending therebetween, as in figs. 2 – 3 and pages 7 – 10. Cella et al. fail to disclose the filter media having a pleat density of about 8 or more pleats per inner diameter inch. Miller et al. teach a similar pleated filter element element such as the one disclosed by Cella et al, the filter element comprising a cylindrical filter media (20) and an exoskeleton (30, 70) supporting the filter media (20), the filter media being formed from a plurality of layers (21, 22, 23, 24) folded into a plurality of longitudinally extending pleats having radially inner peaks defining an inner diameter, radially-outer peaks defining an outer diameter and sidewalls extending therebetween, and the filter media (20) having a pleat density of about 8 or more (in particular, 5 – 20 pleats per inner diameter inch), which is equivalent to the spacer bead density of 5 - 20 per (inner diameter) inch since each pleat has one spacer bead disposed at the inner diameter thereof, as in figs. 2 and 5 and cols. 6 – 7. It is considered obvious to one of ordinary skill in the art at the time of the invention to modify the filter element of Cella et al., by adding the embodiment taught by Miller et al, in order to provide a filter element with a greater number of pleats per inner diameter inch, which means a greater filtration surface area available for filtration per inner diameter inch of the filter element. This design provides for an improved and greater capacity for dirt/particulate holding for the filter element.

22. Regarding claim 19, Miller et al. further teach the spacer beads being evenly spaced at 5 – 20 beads per inner diameter inch, and preferably, to about 8 – 15 beads per inner diameter inch, as in col. 7. .This signifies that the filter media has a pleats density of about 5 - 20 pleats per inner diameter inch, or at least 8 – 15 pleats per inner diameter inch, which includes those values in the claimed range of about 12 or more pleats per inner diameter inch in claim 19. The same motivation used in the preceding paragraph is applied here.

23. Claims 2 – 3 and 7 rejected under 35 U.S.C. 103(a) as being unpatentable over Cella et al. and Miller et al. as applied to claim1 above, and further in view of Miyagi et al. (US 4,588,464).

24. Regarding claim 2, Cella et al. as modified by Miller et al., fail to disclose the filter media consisting essentially of the filtration layer, the inner layer and the outer layer. Miyagi et al. teach a pleated filter element similar to the one taught by Cella et al. and Miller et al, comprising a cylindrical filter media (3) consisting essentially of a filtration layer (1, fluorocarbon resin membrane) sandwiched between inner and outer layers (2, thermoplastic net supporter layers), wherein the filtration layer (1) is being made of at least one polymer (i.e. fluorocarbon resin material) and the inner and outer layers (2) being made of non-woven polymer (i.e. extruded thermoplastic fluorocarbon resin material), and the layers of filter media (3) being folded into a plurality of longitudinally extending pleats, as in fig. 1, abstract and col.

2. It is considered obvious to one of ordinary skill in the art at the time of the invention to modify the filter media of Cella et al. as modified by Miller et al., by substituting it in lieu of the filter media (consisting essentially of a filtration layer and inner and outer layers) taught by Miyagi et al, in order to provide an alternative filter media for the filter element, as well as provide a filter media which has desirable qualities including chemical resistance, temperature resistance and metal leaching, which makes the filter element usable in filtration applications requiring such qualities of the filter media.

25. With respect to claim 3, Miyagi et al. further teach the filtration layer (1) having a thickness of about 0.002 inch (30 μm) to about 0.008 inch (200 μm), and the inner and outer layers (net supporters, 2) each having a thickness of about 0.004 inch (0.1 mm) to about 0.039 inch (1.0 mm), as in cols. 2 – 3. Although the thickness of the filtration layer of Miyagi et al. is slightly smaller in value (i.e. the maximum value in the range being about half of the smallest value of the claimed range of thickness), it is considered obvious to one of ordinary skill in the art at the time of the invention to modify the thickness of the filtration layer to any desired value including those in claimed range (i.e. about 0.015 inch to 0.035 inch), in order to provide a much thicker filtration layer, thereby providing a filtration layer with a greater capacity for dirt/particulate collection. It is considered an optimization step for one of ordinary skill in the art to modify the thickness of the filtration layer, as well as of the inner and outer layers of the filter media, in order to meet the desired filtration capacity without affecting the integrity of the filter media. For thicker filtration layer, a greater dirt holding capacity can be achieved, however, the

weight of the filtration layer also go up and therefore a stronger and probably thicker inner or outer layer might be necessary. Depending on the outcome and requirements of the filtration application and of the user, the thickness values of the filtration layer can be modified accordingly. Furthermore, it is considered that the optimum thickness values of the filtration layer, which is of about 0.015 to 0.035 inch, is considered a result effective variable in this instance. The case law, In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980) also stated that "the discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art, and thus a prima facie case of obviousness is established."

26. Concerning claim 7, Cella et al., as modified by Miller et al., fail to disclose the plurality of longitudinally extending pleats including two end pleats joined together at a side seam and wherein the side seam comprises an adhesive bead which encapsulates all of the layers in distal ends of the end pleats. Miyagi et al. further teach the plurality of longitudinally extending pleats of the filter media (3) including two end pleats (9) joined together at a side seam and wherein the side seam comprises an adhesive bead (thermoplastic fluorocarbon resin bead/ sealing cover, 11) which encapsulates all of the layers in distal ends of the end pleats, as in fig. 4 and as in cols. 3 - 4. It is considered obvious to one of ordinary skill in the art at the time of the invention to modify the filter element of Cella et al., as modified by Miller et al, by adding the embodiment taught by Miyagi et al., in order to provide an alternative design as well as an improved side seam for attaching/bonding end edges/pleats of the cylindrical filter media to form

it into a cylindrical shape, which not only prevents leakage therethrough but has good chemical resistance and pressure resistance.

27. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zraik (796) in view of Miller et al. (048).

28. Regarding claim 23, Zraik disclose a filter element (10) comprising a cylindrical filter media (20) comprising a plurality of longitudinally extending pleats (40) comprising a plurality of longitudinally extending pleats (40), and a side seam (70, 72), the plurality of pleats including two end pleats (74 and 76), each having a distal end (15, 16), a radially inner peak (74, 76), an endmost sidewall (78, 79) extending from the distal end to the radially inner peak and a radially outer peak (80, 81), the sidewalls being positioned adjacent each other and the distal ends being positioned radially outward relative to the radially inward peaks (74, 76) and the side seam comprising an adhesive bead (70, 72) which extends radially inward between the endmost sidewalls of the end pleats and circumferentially between endmost radially outward peaks (80, 81) of the two end pleats, as in figs. 2 – 3 and cols. 4 – 5. However, Zraik fails to disclose an exoskeleton support structure surrounding the filter media and attached to radially outward peaks of each of the pleats. Miller et al. teach a similar pleated filter element to the one disclosed by Zraik, the filter element comprising a cylindrical filter media (20) which comprises a plurality of longitudinally extending pleats, including two end pleats (not shown) each including at least one filtration layer (23), an inner layer (24) and an outer layer (21), and an exoskeleton support

structure (30 or 40 or50 or 60 or 70, 71) surrounding (the outer peripheral surface, therefore, at the location of the radially outer peaks) the filter media (20) and attached to the radially outward peaks of each of the pleats, as in figs. 2 and 9 and cols. 11 – 12. It is considered obvious to one of ordinary skill in the art at the time of the invention to modify the filter element of Zraik, by adding the embodiment (adding of an exoskeleton or outer wrap) taught by Miller et al., in order to provide an improved filter element which has a means for restraining movement of the pleats of the filter media, thereby limiting or preventing abrasion caused by the movement of the pleats and therefore, increasing the lifespan of and preventing damage to the filter media (see col. 9 of Miller et al.).

29. Claims 40 - 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wright et al. (578) in view of Humbert, Jr. (US 3,306,794).

30. With respect to claim 40, although Wright et al. fail to disclose the side seam (not shown) extending substantially parallel to the longitudinal axis of the filter media, it is considered obvious and known to one of ordinary skill in the art that a rectangular sheet of screen material (2, 2a or 3, 3a) such as that disclosed by Wright et al., once its opposite edges are welded in order to form it into a cylindrical or tubular shape around the inner or outer surfaces of the filter media (1a), that a side seam that is extending substantially parallel to the longitudinal axis of the filter media would be formed. Humbert Jr. (794) teach a similar filter element to the one disclosed by Wright et al., wherein the filter element comprises a cylindrical filter media

(42) comprising a plurality of longitudinally extending pleats and an exoskeleton support structure (44) formed of a sheet of screen material (broadly defined as any perforated sheet of material woven or non-woven), wherein the support screen (44) is thermally bonded to the radially-outer peaks by means of a thermosetting resin/adhesive (38), and a side seam (at the vicinity of the overlapped edges of the screen material) is formed by joining lateral edges (45 and 46) of the screen material (44), and the side seam extending substantially parallel to the longitudinal axis of the filter media (42). It is considered obvious to one of ordinary skill in the art at the time of the invention to modify the support screen/exoskeleton of the filter element of Wright et al., by adding the embodiments taught by Humbert Jr. in order to provide an alternative design for forming the exoskeleton support structure for the filter media of the filter element, as well as provide an efficient and stable support structure for the filter media (see cols. 5 – 6).

31. With regards to claim 41, Humbert Jr. further teach the lateral edges (45 and 46) of the support screen (44) being overlapped and thermally bonded together, as in cols. 5 – 6.

32. Claim 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wright et al. (578) and Humbert Jr., as applied in claim 41, and further in view of Cella et al. (WO 97/31695).

33. Regarding claim 42, Wright et al. further discloses the support screen being made of a metallic mesh. Wright et al. as modified by Humbert Jr., fail to disclose the support screen

being made of PVC coated fiberglass mesh. Cella et al. teach a cylindrical pleated filter element similar to the one disclosed by Wright et al. wherein the filter element (10) comprising a cylindrical filter media (20) comprising a plurality of longitudinally extending pleats having radially-inner peaks (52) defining inner diameter and radially-outer peaks (50) defining an outer diameter and sidewalls (54, 56) therebetween and an exoskeleton support structure (64) comprising a sheet of screen material (64) having a width approximately equal to an axial dimension of the filter media and a length approximately equal to a (inner) circumferential dimension of the filter media, wherein the support screen (64) is made of a fiberglass mesh, as in fig. 3 and page 9. It is considered obvious to one of ordinary skill in the art at the time of the invention to modify the material of construction of the support screen of the filter media/filter element of Wright et al., as modified by Humbert Jr., in lieu of the material (fiberglass) in order to provide an alternative material of construction which is non-corrosive when exposed to water and other corrosive agents in a fluid being treated, thereby providing an improved filter element which can withstand corrosion and increase its lifespan. Although Wright et al. as modified by Humbert Jr. and Cella et al. do not teach explicitly the fiberglass (mesh) support screen being a PVC coated fiberglass mesh/support screen, it is considered obvious to one of ordinary skill in the art to modify further the material of construction of the support screen by using a PVC coated fiberglass instead of regular fiberglass, in order to provide a better and improved support screen which is not only non-corrosive but has a greater stability and withstand greater pressures due to filtration conditions. The PVC coating adds additional strength and chemical and physical resistance to the fiberglass mesh/support screen. Furthermore, the case law, ***In re Leshin***, 227

F.2d 197, 125 USPQ 416 (CCPA 1960) stated that a prima case of obviousness exists in a selection of a known plastic or material (which in this instance, is PVC coated fiberglass) to make a container of a type made of plastics/that material (in this instance, fiberglass) prior to the invention.

34. Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wright et al. (578) in view of Cella et al. (WO 97/31695).

35. Concerning claim 43, Wright et al. further discloses the support screen being made of a metallic mesh, but fail to disclose the support screen being made of PVC coated fiberglass mesh. Cella et al. teach a cylindrical pleated filter element similar to the one disclosed by Wright et al. wherein the filter element (10) comprising a cylindrical filter media (20) comprising a plurality of longitudinally extending pleats having radially-inner peaks (52) defining inner diameter and radially-outer peaks (50) defining an outer diameter and sidewalls (54, 56) therebetween and an exoskeleton support structure (64) comprising a sheet of screen material (64) having a width approximately equal to an axial dimension of the filter media and a length approximately equal to a (inner) circumferential dimension of the filter media, wherein the support screen (64) is made of a fiberglass mesh, as in fig. 3 and page 9. It is considered obvious to one of ordinary skill in the art at the time of the invention to modify the material of construction of the support screen of the filter media/filter element of Wright et al., in lieu of the material (fiberglass) in order to provide an alternative material of construction which is non-

corrosive when exposed to water and other corrosive agents in a fluid being treated, thereby providing an improved filter element which can withstand corrosion and increase its lifespan. Although Wright et al. as modified by Cella et al. do not teach explicitly the fiberglass (mesh) support screen being a PVC coated fiberglass mesh/support screen, it is considered obvious to one of ordinary skill in the art to modify further the material of construction of the support screen by using a PVC coated fiberglass instead of regular fiberglass, in order to provide a better and improved support screen which is not only non-corrosive but has a greater stability and withstand greater pressures due to filtration conditions. The PVC coating adds additional strength and chemical and physical resistance to the fiberglass mesh/support screen. Furthermore, the case law, ***In re Leshin***, 227 F.2d 197, 125 USPQ 416 (CCPA 1960) stated that a prima case of obviousness exists in a selection of a known plastic or material (which in this instance, is PVC coated fiberglass) to make a container of a type made of plastics/that material (in this instance, fiberglass) prior to the invention.

36. Claim 52 is rejected under 35 U.S.C. 103(a) as being unpatentable over McLaren (Su 3,752,321) in view of Wright et al. (578).

37. Concerning claim 52, McLaren discloses a coalescer element capable of removing free water and particulates from a fluid such as aviation fuel, the element (2) comprising a cylindrical filter media and an exoskeleton (3 or 16) for the media, the exoskeleton (in particular, 16) being bonded to each of radially inward peaks of pleats of the cylindrical filter media (2) to

support the pleats in a appropriately spaced and non-collapsed condition and providing a tight array of attachment points so that the filter media (2) is sufficiently supported without a central support tube, as in figs. 1 - 3 and in cols. 2- 3. However, McLaren fails to disclose the exoskeleton comprising a support screen providing at least 50% open flow area. Wright et al. teach an exoskeleton (2a, 3a) for a pleated filter element comprising a cylindrical filter media (like the one disclosed by McLaren), wherein the exoskeleton comprises a support screen bonded to each of radially-inward peaks of pleats of the cylindrical filter media (1a), and the support screen providing at least 50% open flow area, as in figs. 2 and 6 – 7 and cols. 1 – 5. It is considered obvious to one of ordinary skill in the art at the time of the invention to modify the exoskeleton of the coalescer/filter element of McLaren by substituting it with the exoskeleton taught by Wright et al., in order to provide an alternative exoskeleton support structure for the filter/coalescer element of McLaren, thereby providing an improved coalescer element which provides not only stability by restraining the movement of pleats (pinching thereof) but also provide an exoskeleton which provides more open flow area for fluid flow therethrough.

Conclusion

38. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. WO 98/14257 (Whitney et al.) and US Patents 3,397,793 (MacDonnell), 4,046,697 (Briggs et al.), 6,099,729 (Cella et al.) and 4,735,720 (Kersting) .

39. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marianne S. Ocampo whose telephone number is (703) 305-1039. The examiner can normally be reached on Mondays to Fridays from 8:00 A.M. to 4:30 P.M..

40. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda Walker can be reached on (703) 308-0457. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

41. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

MSO
M.S.O.
September 16, 2002

M. Savage
MATTHEW O. SAVAGE
PRIMARY EXAMINER